

Claims

Claim 1. (Currently Amended) An improved method of realtime human vision system behavior modeling of the type having spatial modeling to obtain a measure of visible impairment of a test image signal derived from a reference image signal comprising the step of temporally processing the reference and test image signals prior to the spatial modeling to account for ~~temporal response~~ a shift in peak sensitivity and for frequency doubling and other subtleties in a spatio-temporal sensitivity function by emulating neural attack and decay.

Claim 2. (Currently Amended) The improved method as recited in claim 1 wherein the providing processing step comprises the steps of:

linear temporal filtering the reference and test image signals to produce reference and test lowpass filter outputs to account for the subtleties in the spatio-temporal sensitivity function; and

non-linear temporal filtering the reference and test lowpass filter outputs to produce reference and test non-linear filter outputs to account for the shift in peak sensitivity and for frequency doubling in the spatio-temporal sensitivity function, the reference and test non-linear filter outputs being input to the spatial modeling step to produce the measure of visible impairment.

Claim 3. (New) The improved method as recited in claim 2 wherein the linear temporal filtering comprises characteristics of a combination of low-pass and bandpass filtering.

Claim 4. (New) The improved method as recited in claim 2 wherein the linear temporal filtering comprises the steps of:

inputting the reference and test image signals to a series of field delay modules with a tap at each field;

coupling outputs from the taps to respective multipliers for weighting by respective coefficients; and

summing outputs from the respective multipliers to produce the reference and test lowpass filter outputs which are the weighted difference between frames of the reference and test image signals with each frame having an appropriate decay for the older of the two fields that makeup each frame.

Claim 5. (New) The improved method as recited in any of claims 2-4 wherein the non-linear temporal filtering comprises characteristics of an envelope follower having a faster attack than decay.

Claim 6. (New) The improved method as recited in any of claims 2-4 wherein the non-linear temporal filtering comprises the steps of:

comparing the reference and test lowpass filter outputs with respective decayed versions of the reference and test non-linear filter outputs to produce respective comparison outputs;

multiplying the respective comparison outputs by an attack function to produce respective attack outputs;

**rectifying the respective attack outputs to produce respective rectified outputs;
and**

summing the respective rectified outputs with the respective decayed versions to produce the reference and test non-linear filter outputs which accounts for the majority of temporal masking and temporal related visual illusions.

Claim 7. (New) The improved method as recited in claim 6 wherein the non-linear temporal filtering further comprises the step of determining the attack function and a decay function for the decayed versions by calibrating realtime human vision system behavior modeling to both a spatio-temporal threshold surface and corresponding supra-threshold regions of a spatial frequency doubling illusion.